Blue Accelerator: the new testing site in Ostend for maritime technology developments to enhance Blue Economy

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The Blue Economy established sectors are embedded within the overall EU economy with a stable contribution to the Gross Added Value, *GAV*, of 1.5 % from 2012 to 2018, while the employment has grown from 1.8 % to 2.2 % from 2015 to 2018 [1]. Some of these Blue Economy sectors (Marine living resources; e.g. aquaculture, Marine non-living resources; e.g. Oil and gas, Port activities, Maritime transport) are presented in Table 2.1 of [1]. However, still there are sectors such as marine energy (wave, tidal, etc.) that need support for further development in order to reach an established and commercial-stage [2-4]. In order to achieve further development in this sector, testing facilities and numerical modelling simulations for new and existing concepts of marine energy technologies are crucial.

Therefore, the Blue Accelerator project was recently introduced by the Flemish consortium of Ghent University (UGent), the Public Provincial Economic Development Agency of West Flanders (POM West Vlaanderen), the Flanders Marine Institute (VLIZ), the Technical University Alliance for economic transformation in West Flanders (TUA West) and VITO NV. The Blue Accelerator project aims at providing a smooth path for marine energy and maritime technology developers from early design stages to scaled models testing at the UGent wave flume and the Coastal & Ocean Basin (both managed by Ghent University), and to scaled prototype testing at the Blue Accelerator open sea test site.

The Blue Accelerator platform, see Figure 1, is located about 500 m off the port of Ostend. At this location, the average water depth is about 10 m and the tidal range 4 m. The testing zone is delimited by a circular area with a diameter of 440 m. The annual average significant wave height, $\boldsymbol{H_s}$, and the energy period , $\boldsymbol{T_e}$, are 0.65 m and 4.9 s, respectively, with a wave power of 4.33 kW per metre of wavefront (wave energy resource assessment from historically recorded data at 51.247° N, 2.928° E. Data provided by [5]). A long term statistical study has predicted extreme values up to 8.5 m of wave height, when considering a return period of 100 years [6]. Ocean currents between 0.15-0.9 m/s can be found at the Blue Accelerator testing site with values up to 1.87 m/s, when a return period of 5 years is considered [7]. Given the range of the local wave and current conditions, the Blue Accelerator test site is ideal for testing new marine energy and maritime engineering technologies, see Figure 2; e.g. WECs, aquaculture, remote monitoring equipment for offshore applications, maritime transport, and leading research programmes in combination with other existing infrastructure offered by Ghent University.

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Figure 1. The Blue Accelerator platform.

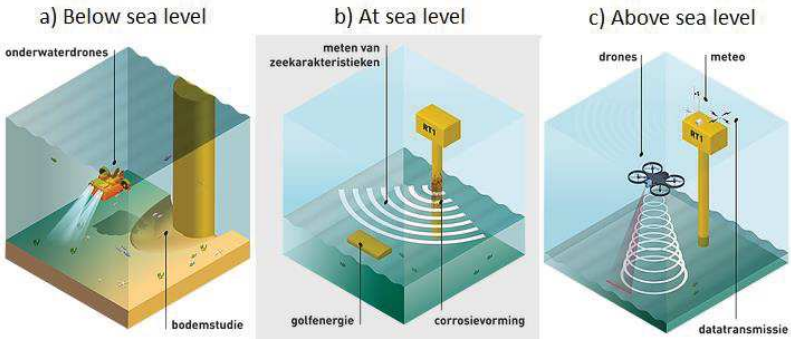

Figure 2. Offshore configuration testing options.

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